questrum, to which the sinus led. She was operated, August 16, 1919, through an incision along the anterior surface of the tibia excising the sinus. The cavity in the tibia was entered, and its walls cut away until it became saucer shaped bounded by healthy bone. Carrel-Dakin treatment was started immediately. The cavity filled in rapidly with clean granulations and on October 13 was entirely obliterated. At that time an old sinus on the back of the leg that had been healed several months broke open and discharged. It was thought that a focus of osteomyelitis had been overlooked, but it cleaned up rapidly, grew gradually smaller, and finally healed on November 15, and has remained healed.

4. G. S. Last May he began to complain of pain, tenderness, and swelling in his right leg, the symptoms varying in intensity from day to day. X-rays disclosed uncertain lesions. On August 16, 1919, he was admitted to the hospital. On August 23, he was operated on through an incision along the middle of the anterior surface of the tibia, the cortex of the bone was drilled through and pus found. A small, localized cavity was disclosed containing about two drams of pus. The cavity was converted into a saucer-shaped wound with healthy bone walls. and Carrel-Dakin treatment instituted. The cavity filled in rapidly and on October 27 was entirely healed.

5. M. R. suffered a compound fracture of the right femur in November, 1917. The wound never healed, so that he has been going about with a discharging sinus ever since. He was admitted to the hospital September 15, 1919. An x-ray showed a small sequestrum lying in a small osteomyelitic cavity. He was operated September 18 by excising the sinus and enlarging the wound longitudinally. The bone cavity was broken into, the sequestrum removed, and the top and walls of the cavity cut away until the cavity had the desired cup shape. Carrel-Dakin treatment was begun at once. The cavity filled in so rapidly that on October 17 the tubes had to be omitted for the simple reason that there was no place to insert them. On October 29 the wound was entirely healed and he left the hospital.

6. H. T. Fourteen years ago he had an acute osteomyelitis of the right tibia which was "scraped" out at the time. The resulting wound has never healed except for an occasional short period. He was admitted to the hospital July 29, 1919, with two discharging sinuses on the anterior surface of the tibia about four inches apart. An x-ray showed several small sequestra lying on the cortex of the bone, which was thickened and irregular in shape. There was no apparent involvement of the medullary cavity. On August 13, he was operated by excising the whole of the old indurated scar and the two sinuses in one mass. To the same extent the cortex of the bone was removed down to but not invading the medullary cavity. This left a shallow trough in the tibia limited everywhere by healthy bone. Carrel-Dakin treatment was started immediately. This wound filled in very slowly although it was at all times free from pus and slough, so that it was not until November 5, 1919, that this comparatively small wound was healed. It has, however, remained healed, which is the longest period of its kind in fourteen years.

Clinical Department.

THE TREATMENT OF CHRONIC ULCERS.

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UNDER the above term are included varicose ulcers, indolent non-healing ulcers of long standing, bed sores, and ulcers of tubercular origin.

These conditions present a sad picture in the wards and clinics of our hospitals because while seldom causing death, they keep the sufferer from the normal enjoyment of life and often from earning a living. The condition is the more pitiable because they are practically all readily curable and yet are allowed to take up time and space in the wards and clinics which should be used for other cases.

They all present a more or less similar picture. In size they vary from half an inch to five or more inches in diameter. The base is covered with exudate. The edges are elevated and covered wth dead epithelium. The surrounding skin is often thickened and always infiltrated with stagnant blood and red cells. In other words, there is venous stasis and pigmentation in the surrounding area. Thus, the living and proliferating skin elements are bound down with dead material and the capillaries which should supply nourishment, are filled with dark, venous blood.

In the face of this, how can we expect to nourish the parts with so-called nutrient dressings or stimulate with ointments when these

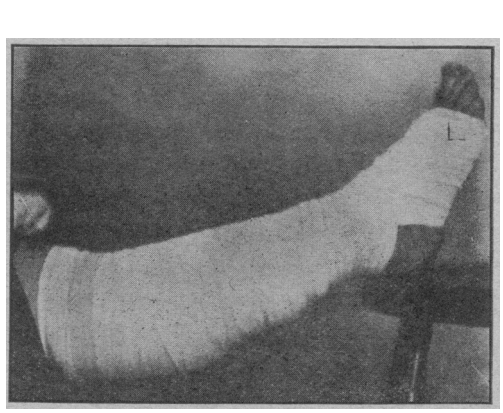
cannot penetrate, and if they could the proliferating cells would be held back by the dead layers covering them.

Success can be hoped for only by the use of some means by which fresh arterial blood can be made to replace the venous blood in the surrounding capillaries and the base can be kept clean and cell proliferation stimulated.

Such a method is within reach and has been used by the writer in part for fifteen years and in full for seven years, with practically one hundred per cent. success in all cases that stay under treatment at least two weeks or, at the longest, eight weeks. In no case is the patient put to bed, or kept from work as a part of the treatment.

As a large per cent. of these ulcers occur on the leg, we will first describe the treatment of a typical case. Each step and detail of the treatment is important and must be carried out in full.

On the insulated platform of the static machine is placed a Morris or other comfortable chair in which the patient sits. Before him on the platform is a small stool on which he places the foot of the leg to be treated. The leg is thus elevated to body level and must be kept so during treatment. Shoe and stocking and all dressings are removed. If this is the first treatment and it is necessary, the foot and leg are first washed with soap suds and rinsed with clear water or bichloride 1 to 2000, then dried. The ulcer is then cleaned with alcohol. As much dead material as possible is removed with forceps and the base of the ulcer is very gently curetted to remove slough and exudate. The ulcer is then cleaned again with alcohol and painted with a 50% tincture of iodine. For this purpose, small toothpick swabs are the most satisfactory. The patient is then connected with the negative pole of the static machine, the positive pole being grounded and the static breeze and sparks thoroughly applied to ulcer and surrounding areas. This usually relieves all pain at the first treatment and can be so regulated as not to be unpleasant. The relief is so great that those patients who object at the first treatment are usually glad to take the second and subsequent treatments. The object of all this is to remove stasis and stimulate healing and it does so with remarkable rapidity. In a short time those showing the greatest thickening and pigmentation, become normal in appearance and granulations rapidly appear. A dry dressing or, occasionally, in the judgment of the operator, a boric ointment dressing is applied and then the leg is bandaged. The last is a most important part of the treatment and must be done correctly. The most satisfactory bandage is a 2½-inch gauze of good quality. The end is moistened and applied to the sole of the foot. This effectually prevents slipping. Then two or three turns are taken about the foot, then a figure of eight is done about the ankle and foot and the bandage is continued up to the knee, making firm, even pressure and leaving no part exposed or without pressure. The bandage must be drawn as tight as the strength of the operator and the strength of the gauze permit. The writer has never seen any harmful results, although at first the legs were watched carefully. The deep veins take up the circulation that is purposely in part shut off. It may be necessary to use a second bandage over the first to get even pressure, and be sure that all parts of the leg are covered. The ends of the bandage are held with adhesive and a strip is put around the foot and ankle; then and only then is the patient allowed to lower the foot. He is allowed to put on stocking and shoe and go about his business. The treatment is repeated three times a week until the ulcer is healed. There is no scarring. After the ulcer is healed, the

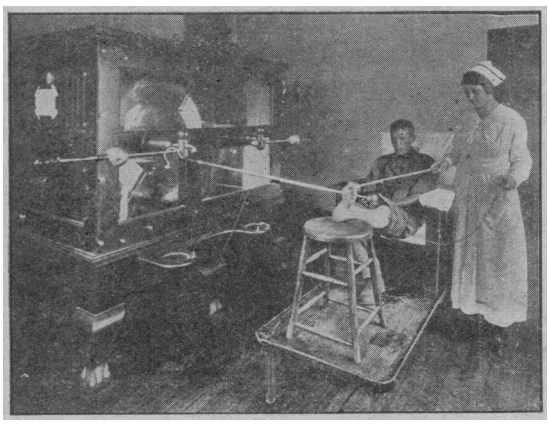


A CORRECTLY BANDAGED LEG.—This bandage is used no matter how small the ulcer may be. The patient had two small ulcers above the ankle, of two years' standing. Congested area, eight inches in diameter. Pain which caused loss of sleep and giving up work. Two treatments relieved pain entirely. After three weeks he is returning to work. Ulcers clean and two-thirds healed. Hospital case.

patient must wear a tight-fitting elastic stocking going from the foot to the knee. This stocking must be measured for with the foot in the same position as for treatment.

The ulcers, in my experience, never recur if such a stocking is worn permanently when the patient is out of bed.

In the case of bed sores and tubercular ulcers as they are located on other parts of the



THIS PICTURE ILLUSTRATES THE PROPER POSITION OF THE PATIENT FOR TREATMENT.—The nurse was giving static sparks. Man had a small ulcer of over two years' standing, which healed completely in four weeks. He had been in the wards seven weeks with no result. While under my care he continued work as a hostler in a livery stable.

body, the technique is slightly different. They are cleaned as are the varicose ulcers, iodine is painted on, and I may say here it may in all cases be used freely without fear of a burn or injury to the tissues when followed by static sparks or breeze. Then the breeze is used instead of the sparks and a dry dressing of boric ointment is held on with adhesive instead of the bandage, as is the case of varicose ulcers.

Sinuses following osteomyelitis, as well as tubercular fistulae, do equally well. The sinus is curetted clean at each treatment, then swabbed with iodine and the sparks or breeze applied. The fistulae are swabbed out with iodine, then treated as before.

Very recently the writer has used to some extent and very satisfactorily, di-chloramine T in place of iodine or boric ointment and applied it after the electrical treatment, the previous steps being as before.

Closely allied to the above conditions is herpes zoster. The results of electrical treatment in this condition are so satisfactory that it may well be included in this article. As is well known this is of nerve origin, the rash always following the course of some nerve. Treatment should begin as soon as the condition is recognized. If a diagnosis can be made before the rash, so much the better.

The treatment consists of the application of the static wave current to the spine at the point of origin of the affected nerve and of sparks to the herpes.

This treatment never fails to relieve the pain completely and to dry the herpes with one or two applications if given at the onset of the disease. In the later stage the result is satisfactory but slower, more treatments being required.

AN UNUSUAL CASE OF METACARPAL FRACTURE.

BY S. S. DEARBORN, M.D., NASHUA, N. H.

MY only excuse for presenting this case is the unusual cause, in this instance, of fracture of a metacarpal bone.